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Text:

- CIBA PRODUCTS CORPORATION
- FIRMENICH INCORPORATED
- MONSEY PRODUCTS COMPANY, INC.

CORPORATE RESEARCH ON THESE THREE COMPANIES INDICATES THAT THEY ARE ALL INVOLVED IN INDUSTRIAL PRODUCTION. CIBA PRODUCTS CORPORATION (NOW CIBA-GEIGY CORPORATION) PRODUCES PHARMACEUTICALS, CONTACT LENSES, HERBICIDES AND FUNGICIDES, AND SEEDS. FIRMENICH INCORPORATED IS INVOLVED IN THE PRODUCTION OF CHEMICALS AND SYNTHETIC PERFUMES AN MONSEY PRODUCTS COMPANY, INC. PRODUCES ASPHALT, COAL TAR ROOFING, DRIVEWAY SEALER AND AUTOMOTIVE UNDERCOATINGS.

DURING THE PERIOD OF SITE OWNERSHIP BY A PREDECESSOR OF CIBA-GEIGY (CIBA PRODUCTS COMPANY) FROM 1947 TO 1959, A SERIES OF EIGHT LAGOONS WERE OPERATED ON SITE. THESE LAGOONS, WHICH RECEIVED VARIOUS RESIDUES FROM THE MANUFACTURING OPERATIONS AT THAT TIME, WERE ULTIMATELY ABANDONED AND CLOSED. SEVERAL OF THESE LAGOONS WERE SUBSEQUENTLY BACKFILLED OR OTHERWISE REGRADED.

VOLATILE ORGANIC COMPOUNDS WERE FIRST DETECTED IN THE GROUNDWATER AT KIMBERTON DURING ROUTINE WATER QUALITY TESTING OF A PRIVATE WELL ON THE MONSEY PROPERTY BY CHESTER COUNTY HEALTH DEPARTMENT (CCDH) IN AUGUST 1981. SUBSEQUENT TESTING OF 24 ADDITIONAL LOCAL WELLS BY PADER IN JANUARY THROUGH MARCH OF 1982 DETECTED LEVELS OF A NUMBER OF VOLATILE ORGANIC COMPOUNDS IN TWELVE OF THE WELLS SAMPLED.

IN RESPONSE TO THE REPORTED GROUNDWATER CONTAMINATION IN THE BOROUGH OF KIMBERTON, EPA CONDUCTED A FIELD INVESTIGATION OF LOCAL GROUNDWATER, SURFACE WATER, AND SOIL CONTAMINATION IN THE SPRING OF 1982. THIS INVESTIGATION REPORTED THE PRESENCE OF ORGANIC CHEMICALS, INCLUDING TRICHLOROETHYLENE (TCE) AND TRANS-1,2-DICHLOROETHYLENE (DCE), IN LOCAL GROUNDWATER, SURFACE WATER, AND SOILS SAMPLED AT OR NEAR THE SITE. AS A RESULT OF THE FIELD INVESTIGATION TEAM'S (FIT) REPORT OF 23 JULY 1982, THE MONSEY SITE WAS PLACED ON THE NPL BY THE EPA.

INVESTIGATIONS CONDUCTED BY CIBA-GEIGY AND MONSEY SINCE THE INITIAL DETECTION OF ORGANIC COMPOUNDS IN WATER AND SOIL SAMPLES HAVE INDICATED A GRADUAL RELEASE OF VOLATILE ORGANIC COMPOUNDS THROUGH THE SUBSURFACE TO THE LOCAL GROUND WATER TABLE. THESE COMPOUNDS GRADUALLY MIGRATE WITH LOCAL GROUNDWATER AND DISCHARGE TO SURFACE WATERS TO THE NORTH AND EAST IN THE VILLAGE OF KIMBERTON. VOLATILE ORGANIC COMPOUNDS HAVE BEEN DETECTED IN A NUMBER OF PRIVATE WELLS IN AN APPARENT DOWNGRADIENT DIRECTION FROM THE MONSEY PROPERTY. LIMITED, LOW LEVEL SURFACE WATER CONTAMINATION HAS ALSO BEEN DETECTED IN LOCAL RECEPTOR STREAMS.

#EH
IV. ENFORCEMENT HISTORY

PAST DISPOSAL PRACTICES INVOLVING HAZARDOUS SUBSTANCES, WHICH OCCURRED BETWEEN 1947 AND 1959, HAVE RESULTED IN GROUNDWATER AND SOIL CONTAMINATION AT THIS SITE. IN SEPTEMBER 1986, PADER, WHICH IS THE ENFORCEMENT LEAD FOR THIS SITE, SENT CIBA-GEIGY AND MONSEY LETTERS INFORMING THESE COMPANIES THAT THEY WERE POTENTIALLY RESPONSIBLE PARTIES (PRPS) AND LIABLE FOR THE CONTAMINATION AT THIS SITE. IN ADDITION, THESE LETTERS SOUGHT THEIR PARTICIPATION IN THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDIES (RI/FS) PROCESS. BOTH COMPANIES AGREED TO CONDUCT AN RI/FS AT THIS SITE, TO PROVIDE AN ALTERNATE SOURCE OF DRINKING AND CONTACT WATER TO THOSE RESIDENTIAL AND COMMERCIAL LOCATIONS WHOSE WATER SUPPLY WAS IMPACTED BY THE SITE AND TO CONTINUE TO MONITOR SPECIFIED LOCATIONS FOR THE IDENTIFIED CONTAMINANTS BY ENTERING INTO CONSENT ORDER AND AGREEMENTS WITH PADER IN 1986 AND 1987.

#SC
V. SITE CHARACTERISTICS

A. GEOLOGY/HYDROGEOLOGY

1. SITE GEOLOGY

LOCALLY, IN KIMBERTON, TWO PREDOMINANT FORMATIONS EXIST: A GRAPHITIC GNEISS WHICH IS A METAMORPHIC ROCK OF PRECAMBRIAN AGE DESCRIBED AS A MEDIUM GRAINED GNEISS AND SCHIST CHARACTERIZED BY THE PRESENCE OF GRAPHITE. THE OTHER, THE STOCKTON FORMATION, IS A SEDIMENTARY UNIT OF TRIASSIC AGE AND CONSISTS OF LOCALLY OF GREY AND RED SILTSTONES, RED SHALES, FINE TO MEDIUM GREY AND REDDISH GREY SANDSTONES AND ARKOSIC SANDSTONES (FIGURE 4). THE SHALES AND SILTSTONES ARE SOMETIMES THINLY INTER-BEDDED WITH IMPURE CARBONATE ROCK. THE CONTACT ZONE BETWEEN THE GRAPHITIC GNEISS AND THE STOCKTON FORMATION LIES TO THE NORTHEAST OF COLDSTREAM ROAD AND IN AN APPROXIMATE WNW TO ESE ORIENTATION. IT IS, FOR THE MOST PART, ILL-DEFINED AND HAS BEEN MAPPED USING DRILLING LOGS OF THE SITE MONITORING WELLS. AS DETERMINED THROUGH DRILLING OF THE MONITORING WELLS, THE GRAPHITIC GNEISS HAS UNDERGONE SIGNIFICANT MECHANICAL AND CHEMICAL BREAKDOWN (WEATHERING).

THESE PROCESSES HAVE WORKED PROGRESSIVELY DOWNWARD FROM THE SURFACE GENERALLY CREATING AN UPPER UNCONSOLIDATED WEATHERED ZONE OF DECOMPOSED ROCK AND SOIL WHICH GRADES VERTICALLY INTO A CRUMBLY, GRAVEL-LIKE MATERIAL WHERE PIECES OF SAND TO BOULDER-SIZE ROCKS REMAIN IN PLACE IN A CLAYEY MATRIX. THE WEATHERED ZONE WAS FOUND TO BE BETWEEN 50 FEET AND 75 FEET IN THICKNESS EXCEPT IN ONE AREA WHERE IT WAS ONLY 30 FEET THICK. GROUNDWATER WAS NOTED TO OCCUR ALMOST EXCLUSIVELY WITHIN THE WEATHERED PORTION OF THE GRAPHITIC GNEISS (LOCALLY ON THE MONSEY PRODUCTS COMPANY PROPERTY).

WEATHERING WITHIN THE STOCKTON FORMATION WAS FAR LESS SEVERE WITH THE WEATHERED LAYER GENERALLY RANGING IN THICKNESS FROM 5 FEET TO 15 FEET (FIGURE 5).

2. HYDROGEOLOGY

THE HYDROGEOLOGY OF THE KIMBERTON AREA IS TYPICAL OF THE CHESTER COUNTY REGION AS A WHOLE. WATER LEVELS FLUCTUATE IN RESPONSE TO SEASONAL PRECIPITATION AND EVAPOROTRANSPIRATIONAL TRENDS. THE WATER TABLE CLOSELY MIMICS TOPOGRAPHY WITH THE DOMINANT RECHARGE AREAS LYING IN THE HIGHER ELEVATIONS AND DISCHARGE ZONES NOTED THROUGH LOCAL SPRINGS AND STREAMS AT LOW ELEVATIONS.

WITHIN THE AREA OF CONCERN, WATER TABLE CONDITIONS EXIST WITHIN TWO CONTRASTING (LITHOGICALLY DERIVED) WATER-BEARING UNITS: THE METAMORPHIC GRAPHITIC GNEISS (ENCOMPASSING THE MONSEY PRODUCTS COMPANY PROPERTY) AND THE STOCKTON FORMATION (COMPRISING THE DOWNTOWN KIMBERTON AREA AND SURROUNDING PROPERTIES). AS DISCUSSED PREVIOUSLY, THE GRAPHITIC GNEISS IS HIGHLY WEATHERED TO A MEDIAN DEPTH OF 50 FEET TO 75 FEET. THE UNCONSOLIDATED UPPER PART OF THE GRAPHITIC GNEISS GENERALLY HAS MODERATE TO LOW PERMEABILITY, BUT CONTAINS A CONSIDERABLE AMOUNT OF WATER IN STORAGE. BELOW THE UNCONSOLIDATED ZONE THE ROCK IS GENERALLY SOLID; HOWEVER, SOME MINERALS ARE HEAVILY WEATHERED, PARTICULARLY ALONG FRACTURES. PERMEABILITY AND STORAGE CAPACITY OF THE SOLID FRACTURED ROCK GENERALLY DECREASE WITH DEPTH AS THE DEGREE OF WEATHERING DECREASES. THE HIGHEST PERMEABILITY PROBABLY OCCURS WHERE THE UNCONSOLIDATED AND SOLID ROCK MERGE. IN THIS TRANSITIONAL AREA, OPENINGS IN ROCK ARE FORMED OR ENLARGED BY THE WEATHERING PROCESS. STORAGE CAPACITY, HOWEVER, IS LOW BECAUSE THE ROCK HAS LIMITED POROSITY.

GROUNDWATER MOVEMENT THROUGH THE GNEISS WILL TEND TO MIGRATE IN RESPONSE TO ELEVATIONAL CHANGES IN THE WATER TABLE (FIGURE 6). THE SUBSURFACE ZONE OF PRIMARY MOVEMENT IS NOTED WITHIN THE HIGHLY WEATHERED AND FRACTURED UPPER PORTION OF THE GNEISS. DEEPER WATER-BEARING ZONES ARE REPORTED TO OCCUR AT FRACTURE TRACES (DOMINANTLY VERTICAL TO

SUB-VERTICAL IN PROFILE), AND GENERALLY RECEIVE RECHARGE VIA VERTICAL INFILTRATION FROM THE OVERLYING HORIZONS. LOCAL WELL YIELDS WITHIN THE GRAPHITIC GNEISS RANGE FROM 4 - 25 GPM IN WELLS WHICH DRAW WATER FROM THE WEATHERED ZONE, WITH OVER 200 GPM REPORTED IN SEVERAL OF THE DEEPER WELLS (EXISTING MONSEY WELLS # 1-4) WHICH MAY PENETRATE DEEPER FRACTURES WITHIN THE BEDROCK GNEISS.

THE DEEPER FRACTURE ZONES HAVE SITE SPECIFIC SIGNIFICANCE DUE TO THE POTENTIAL FOR INCREASED WATER TRANSMISSION. HYDRAULIC COMMUNICATION WITHIN UPPER WEATHERED ZONES OF THE GRAPHITIC GNEISS IS LIKELY. ASSOCIATED GROUNDWATER GRADIENT/MOVEMENT IS CONSIDERED TO BE DIRECTIONALLY CONTROLLED THROUGH WATER GRADIENT ELEVATIONAL CHANGES (AS OBSERVED WITHIN MONITORING WELLS AND INFERRED THROUGH REGIONAL INTERPRETATIONS OF GROUNDWATER MOVEMENT). SPECIFICALLY, GROUNDWATER MOVEMENT LOCALLY WITHIN THE GRAPHITIC GNEISS AND SUSPECT FRACTURE ZONES ARE REGIONALLY INTERPRETED IN A NORTH-NORTH EASTERLY DIRECTION FROM THE MONSEY PROPERTY AND DOWNTOWN KIMBERTON AREA, TOWARD FRENCH CREEK.

THE STOCKTON FORMATION GENERALLY CONSISTS OF INTER-BEDDED SANDSTONES, SILTSTONES, AND SHALES. THE INTER-BEDDING AND FRACTURING HAS CAUSED EXTREMELY ANISOTROPIC AND HETEROGENEOUS HYDRAULIC CHARACTERISTICS ASSOCIATED WITH THIS FORMATION. GROUNDWATER IS LARGELY TRANSMITTED ALONG BEDDING PLANES, FRACTURES AND JOINTS. WATER WITHDRAWAL RATES NOTED FOR WELLS LOCALLY PENETRATING THE STOCKTON HAVE YIELDED BETWEEN 2 AND 20 GPM, DEPENDING UPON THE NATURE, LOCATION AND DEPTH OF WELLS.

A. GROUNDWATER MOVEMENT

GROUNDWATER ELEVATIONS OF BOTH ON-SITE (MONSEY PRODUCTS COMPANY PROPERTY) AND OFF-SITE MONITORING WELLS WERE MEASURED FROM THE TOP OF SECURE CASINGS USING ELECTRICAL WATER LEVEL DETECTORS (FIGURE 7). FIELD SURVEYS WERE PERFORMED TO ACCURATELY DETERMINE THE HORIZONTAL COORDINATES AND VERTICAL ELEVATIONS (TIED INTO U.S.G.S. BENCH MARK DATUM LOCATED IN DOWNTOWN KIMBERTON) OF WELL CASINGS. RESPECTIVE FIELD DATA TRANSPOSED ONTO PREPARED BASE MAPS PROVIDED A BASIS FOR THE FOLLOWING INTERPRETIVE CORRELATIONS RELATIVE TO GROUNDWATER MOVEMENT WITHIN THE MONSEY PRODUCTS COMPANY PROPERTY AND ADJACENT KIMBERTON AREA:

- THE OCCURRENCE OF GROUNDWATER IS UNDER WATER TABLE CONDITIONS AT DEPTHS RANGING FROM APPROXIMATELY 2 FEET TO 50 FEET BELOW LAND SURFACE.

- WATER TABLE ELEVATIONS MIMIC A SUBDUED VERSION OF SURFACE TOPOGRAPHY; INCREASED GROUNDWATER ELEVATIONS CORRELATING TO AREAS OF HIGH TOPOGRAPHIC ELEVATIONS SUCH AS RIDGES AND KNOLLS; REDUCED GROUNDWATER ELEVATIONS OCCURRING DOMINANTLY IN TOPOGRAPHIC LOW AREAS CHARACTERIZED BY STREAMS, CREEKS, AND/OR SPRINGS.

- LOCAL GROUNDWATER RECHARGE OF SIGNIFICANCE TO THE MONSEY PROPERTY AND ADJACENT KIMBERTON AREA OCCURS FROM BOTH VERTICAL INFILTRATION ONTO RELATED SURFACE AREAS AND DIRECTIONALLY FROM ADJACENT TOPOGRAPHIC HIGH AREAS; DOMINANTLY FROM THE SOUTH OF ROUTE 113, FROM THE NORTH OF HARES HILL ROAD, AND FROM THE EAST OF DOWNTOWN KIMBERTON (UP TOPOGRAPHIC GRADIENT FROM THE EASTERLY DIRECTION OF THE UNNAMED CREEK/MARSH AREA).

- GROUNDWATER DISCHARGE LOCALLY OCCURS THROUGH SURFACE SPRINGS, SEEPS, AND CREEKS TO SMALL STREAMS LOCATED WITHIN LOCAL TOPOGRAPHIC LOWS. ONE SUCH DISCHARGE AREA IS LOCATED ADJACENT TO THE NORTHWEST BOUNDARY OF MONSEY'S PROPERTY AS AN UNNAMED CREEK FLOWING TO THE NORTHEAST THROUGH THE CENTER OF KIMBERTON (STREAM "A"; FIGURE 8). ANOTHER SUCH DISCHARGE AREA EXISTS TO THE NORTHEAST OF MONSEY PROPERTY AS A MINOR UNNAMED CREEK FLOWING TO THE NORTHWEST AND EVENTUALLY CONVERGING WITH STREAM "A" (STREAM "B"; FIGURE 8). A THIRD LOCAL GROUNDWATER DISCHARGE OCCURS TO THE SOUTHEAST OF MONSEY PROPERTY, AGAIN AS AN UNNAMED MINOR CREEK IN THIS CASE FLOWING GENERALLY SOUTHEAST FROM THE SITE AREA (STREAM "C"; FIGURE 8).

- GROUNDWATER GRADIENT AND GROUND WATER FLOW ARE DIRECTIONALLY CONTROLLED IN RESPONSE TO ELEVATIONAL CHANGES IN THE WATER TABLE. UNDER NATURAL, NON-PUMPING CONDITIONS, THE PREDOMINANT GROUND WATER GRADIENT FROM THE MONSEY PROPERTY RANGES DIRECTIONALLY FROM THE NORTHWEST CLOCKWISE THROUGH THE SOUTHEAST, TOWARD THE ABOVE NOTED GROUND WATER DISCHARGE ZONES.

- PHYSICOCHEMICAL PARAMETERS MEASURED FROM AREA MONITORING WELLS AS BASELINE WATER QUALITY CHARACTERISTICS (PH, TDS, AND CHLORIDE) APPEAR TO FALL WITHIN BACKGROUND RANGES.

B. SURFACE WATER

THE LOCAL SURFACE WATERS CAN BE DIVIDED INTO THREE UNNAMED STREAMS (FIGURE 8) EMANATING WITHIN AND/OR FLOWING THROUGH THE CENTRAL KIMBERTON AREA. FOR CLARITY, THE STREAMS HAVE BEEN DESIGNATED AS FOLLOWS:

- STREAM A: A SMALL, PERMANENT STREAM (THE PRIMARY STREAM IN THE CENTER OF KIMBERTON) FLOWING GENERALLY SOUTH TO NORTH ADJACENT TO THE NORTHWESTERN BOUNDARY OF MONSEY PROPERTY. THIS STREAM IS PRIMARILY SPRING FED WEST OF THE SITE FROM SOURCES AT AND UPSTREAM OF THE GNEISS/CLASTIC CONTACT ZONE. ESTIMATED AVERAGE STREAM FLOW IN THIS AREA RANGES SEASONALLY FROM 0.5 TO 4 CUBIC FEET PER SECOND (CFS). A SIGNIFICANT INCREASE IN STREAM VOLUME OCCURS UPON ITS CONFLUENCE WITH THE OUT-FALL FROM GOTWALS PONDS. ESTIMATED FLOW DOWNSTREAM OF THIS CONFLUENCE RANGES FROM 8 TO 12 CFS.

- STREAM B: AN APPARENT MINOR INTERMITTENT STREAM WHICH APPEARS TO ORIGINATE FROM A SPRING PROXIMAL TO THE 1950 LOCATION OF THE KIMBERTON TOWN DUMP. THE TERMINUS OF THIS STREAM IS NOT VISIBLE ON AERIAL PHOTOGRAPHS BUT IT IS BELIEVED TO BECOME CONFLUENT WITH STREAM A. ESTIMATED FLOW DOWN THE HEADWATERS IS 0.1 TO 0.5 CFS. DOWNSTREAM FLOW HAS NOT BEEN OBSERVED, BUT IS NOT ANTICIPATED TO BE SIGNIFICANT.

- STREAM C: A TRIBUTARY OF FRENCH CREEK WHICH FLOWS SOUTH OF THE INTERSECTION OF ROUTE 113 AND COLD STREAM ROAD. THIS STREAM DERIVES A MAJOR VOLUME OF ITS FLOW FROM TOPOGRAPHICALLY HIGH AREAS TO THE SOUTH OF THE STUDY AREA. STREAM FLOW APPEARS TO BE INTERMITTENT UPSTREAM OF COLD STREAM ROAD. HOWEVER, A SIGNIFICANT INCREASE IN STREAM FLOW RESULTS FROM A MAJOR SPRING LOCATED ROUGHLY 300 FEET DOWNSTREAM OF COLD STREAM ROAD WITH FLOWS ESTIMATED AT 0.5 TO 2 CFS.

B. EXTENT OF CONTAMINATION

1. DRUM REMOVAL

IN MID 1982, THE PRPS SUPERVISED THE EXCAVATION AND REMOVAL OF FIFTY-SEVEN 55-GALLON DRUMS FROM AN ABANDONED, ON-SITE SEPTIC SYSTEM FORMERLY USED TO SERVE THE PLANT'S WASTEWATER NEEDS. THESE DRUMS CONTAINED OFF SPECIFICATION ASPHALTIC MATERIALS WHICH HAD BEEN USED AS PARTIAL BACK-FILL FOR THE COLLAPSED SEPTIC PIT SOMETIME EARLIER. THE DRUM REMOVAL PROGRAM, CONDUCTED IN CONJUNCTION WITH DER, CONSISTED OF REMOVAL OF ALL DRUMS FROM THE PIT AREA, PROCUREMENT OF SAMPLES FROM FIVE REPRESENTATIVE DRUMS FOR ANALYSIS, PROCUREMENT OF POST-EXCAVATION SOIL SAMPLES FOR ANALYSIS, AND APPRAISAL OF POSSIBLE RELATIONSHIP OF GROUNDWATER CONTAMINATION TO THE DRUM BURIAL.

THE DRUM EXCAVATION, REMOVAL, AND DISPOSAL PROGRAM WAS SUCCESSFULLY COMPLETED IN NOVEMBER 1982. SOIL SAMPLES PROCURED BENEATH THE EXCAVATION FLOOR INDICATED NO EXTENSIVE MIGRATION OF ORGANIC COMPOUNDS FROM THE AREA.

THE PRELIMINARY HYDROGEOLOGIC ASSESSMENT CONDUCTED BY THE PRPS RECOMMENDED A MORE DEFINITIVE OFF-SITE INVESTIGATION OF THE GROUNDWATER REGIME SURROUNDING THE SITE. THIS IS CURRENTLY BEING COMPLETED.

2. LAGOON EXCAVATION

AS A RESULT OF SOIL SAMPLING CONDUCTED DURING PRELIMINARY SITE ASSESSMENT ACTIVITIES, THREE AREAS WERE IDENTIFIED WITHIN MONSEY PROPERTY WITH RELATIVELY HIGH LEVELS OF ORGANIC COMPOUND CONTAMINATION. STUDY OF AVAILABLE HISTORIC AERIAL PHOTOGRAPHS CONFIRMED THAT THE THREE AREAS WERE FORMER TREATMENT LAGOONS. THESE THREE AREAS, IDENTIFIED BY GROUNDWATER TECHNOLOGIES, INC. (GTI) AS LAGOONS 6, 7, AND 9 WERE CHARACTERIZED BY MATERIALS OF SIMILAR CHEMICAL COMPOSITION AND PHYSICAL APPEARANCE (FIGURE 9).

UPON REVIEW OF THIS INFORMATION AND AT THE REQUEST OF PADER, A PROGRAM WAS UNDERTAKEN BY THE PRPS TO EXCAVATE, REMOVE, AND DISPOSE OF SOILS FROM THESE THREE FORMER LAGOON AREAS AS PART OF A SITE REMEDIAL ACTION PROGRAM.

THE EXCAVATION PROGRAM WAS FINALIZED DURING AUGUST AND EARLY SEPTEMBER 1984. ACTUAL SITE EXCAVATION WAS INITIATED ON SEPTEMBER 17 AND COMPLETED ON SEPTEMBER 25. SITE BACKFILLING AND RESTORATION WERE COMPLETED ON OCTOBER 8.

UPON COMPLETION OF THE EXCAVATION PROGRAM ON SEPTEMBER 25, 1984, A TOTAL OF 143 TRUCKLOADS OF CONTAMINATED SOIL HAD BEEN EXCAVATED FROM THE SITE REPRESENTING APPROXIMATELY 2,050 CUBIC YARDS OF MATERIAL. ALL EXCAVATED MATERIALS WERE CONFIRMED AS RECEIVED AT THE LICENSED TSD FACILITY OPERATED BY CECOS INTERNATIONAL, INC. IN NIAGARA FALLS, NEW YORK.

EXCAVATION LIMITS WERE DETERMINED IN THE FIELD BY VISUAL ASSESSMENT AND THROUGH PHOTOIONIZER MEASUREMENTS PROCURED ALONG THE BASE AND SIDES OF EACH EXCAVATION. UPON COMPLETION OF THE EXCAVATION PROGRAM, REPRESENTATIVE SOIL SAMPLES WERE OBTAINED FROM PIT FLOORS AND WALLS IN THE PRESENCE OF PADER OR EPA AND SAMPLE SPLITS WERE PROVIDED TO PADER FOR ANALYSIS. SUBSEQUENT TO THIS PROCESS, MARKER HORIZONS WERE PLACED IN EACH EXCAVATION AND BACKFILLING WAS INITIATED. SITE BACKFILLING AND RESTORATION WERE INITIATED ON SEPTEMBER 26 AND COMPLETED ON OCTOBER 8 WITH THE APPLICATION OF VEGETATIVE COVER MATERIAL.

THE COMBINATION OF VISUAL ASSESSMENT, LOW-LEVEL RECORDED PHOTOIONIZER READINGS, AND ANALYTICAL RESULTS OF POST-EXCAVATION SOIL SAMPLES ALL INDICATE THE LAGOON EXCAVATION REMEDIAL ACTION PROGRAM WAS SUCCESSFUL IN REMOVING POTENTIAL SOURCE MATERIALS OF GROUND WATER CONTAMINATION FROM THE CURRENT MONSEY SITE. DATA OBTAINED DURING AND SUBSEQUENT TO THE EXCAVATION PROGRAM INDICATE A MINIMUM OF 95 PERCENT REDUCTION IN TOTAL VOLATILE ORGANIC COMPOUND CONCENTRATION IN THESE FORMER LAGOONS.

CURRENTLY, SAMPLING AND ANALYSIS HAS/IS BEING PERFORMED IN OTHER LAGOON AREAS IDENTIFIED ON THE MONSEY PROPERTY.

3. GROUNDWATER CONTAMINATION

A. MONITORING WELLS

DURING THE PERIOD FROM APRIL THROUGH SEPTEMBER 1985, A TOTAL OF 21 MONITORING WELLS WERE INSTALLED IN KIMBERTON WITHIN AND IN THE PRIMARILY DOWNGRADIENT DIRECTION FROM THE GENERAL AREA OF CURRENT MONSEY PROPERTY (FIGURE 7). THE WELL INSTALLATION PROGRAM WAS DESIGNED TO PROVIDE DEFINITION OF LOCAL HYDROGEOLOGY IN RELATION TO CONTAMINANT MOVEMENT IN THE AREA.

THIS GROUNDWATER MONITORING PROGRAM INCLUDED THE DESIGN AND SUPERVISION OF MONITORING WELL INSTALLATION. LOCAL PERMITS AND, WHERE APPLICABLE, THIRD-PARTY PERMISSION WERE OBTAINED PRIOR TO WELL INSTALLATION. PROPER WELL INSTALLATION SPECIFICATIONS AND DECONTAMINATION PROCEDURES WERE ESTABLISHED AND REVIEWED BY BOTH PADER AND EPA.

A PRELIMINARY ASSESSMENT OF THAT GROUNDWATER MONITORING PROGRAM, WHICH INCLUDES DATA FROM THE MONITORING PROGRAM, REVEALED THE FOLLOWING:

- MOVEMENT OF THE VOLATILE ORGANIC COMPOUND (VOC) CONTAMINANT PLUME IS PRIMARILY CONTROLLED BY LOCAL GROUND WATER GRADIENT ACROSS THE SITE AREA (FIGURES 6 AND 10). CONTAMINANTS FOUND IN MONITORING WELLS ARE LISTED IN TABLE 1.

- BASE NEUTRAL COMPOUNDS WERE NOT DETECTED FROM WELLS SAMPLED DURING THIS PROGRAM.

ADDITIONAL GROUNDWATER MONITORING WELLS WERE INSTALLED BETWEEN FEBRUARY AND JULY 1988 DURING THE SUPPLEMENTAL REMEDIAL INVESTIGATION TO FURTHER DEFINE THE CONTAMINANT PLUME MIGRATION (FIGURE 7).

B. RESIDENTIAL AND PRIVATE WELLS

IN AUGUST 1985, A PROGRAM OF RESIDENTIAL AND PRIVATE WELL SAMPLING IN THE CENTRAL KIMBERTON AREA WAS INITIATED. RESULTS OF THIS INITIAL SAMPLING PROGRAM INDICATED THE PRESENCE OF VOLATILE ORGANIC COMPOUNDS, PRIMARILY TRICHLOROETHYLENE (TCE), DICHLOROETHYLENE (DCE), AND VINYL CHLORIDE (VC), WITHIN THE WATER SUPPLY OF A NUMBER OF LOCAL RESIDENCES AND COMMERCIAL ESTABLISHMENTS. AS A RESULT OF THIS SAMPLING PROGRAM, ALTERNATIVE WATER SUPPLIES HAVE BEEN PROVIDED TO A TOTAL OF 25 LOCATIONS WITHIN THE BOROUGH OF KIMBERTON. CURRENTLY 23 LOCATIONS RECEIVE ALTERNATIVE WATER SUPPLIES (FIGURE 11).

THE COLLECTION OF DATA THROUGH THE ONGOING SAMPLING PROGRAM HAS AND CONTINUES TO PROVIDE USEFUL INFORMATION ON GROUNDWATER PLUME DEFINITION AND MIGRATION PATTERN.

4. SURFACE WATER CONTAMINATION

SURFACE WATER QUALITY INVESTIGATIONS HAVE BEEN CONDUCTED ON STREAM A SOUTH OF KIMBERTON ROAD BY ECOLOGY AND ENVIRONMENT, INC. IN APRIL 1982 (AS PART OF EPA'S FIT STUDY) AND BY GTI AS PART OF THE PRELIMINARY SITE INVESTIGATION CONDUCTED LATE THAT SAME YEAR. ANALYTICAL DATA FROM STREAM SAMPLES PROCURED DURING THESE STUDIES REVEALED THE PRESENCE OF LOW LEVELS OF VOCS DOWNSTREAM OF THE COLD STREAM ROAD BRIDGE. THESE RESULTS, TOGETHER WITH ANALYSES FROM SAMPLES OF SPRINGS TAKEN BY GTI IMMEDIATELY NORTH OF THE BRIDGE, INDICATED THAT VOCS MAY BE ENTERING THE STREAM PRIMARILY FROM SPRING DISCHARGES.

STREAM A SAMPLING CONDUCTED BY ERM IN DECEMBER 1985, IN THE DOWNSTREAM DIRECTION TO A POINT IMMEDIATELY BEYOND THE CONFLUENCE OF STREAM A WITH EFFLUENT FROM GOTWALS POND, CONFIRMED THE PRESENCE OF VOCS WITHIN THE STREAM BUT WITH SOMEWHAT DIFFERENT DISTRIBUTION. THE CURRENT STREAM SAMPLING PROGRAM IS CONCERNED WITH DEFINING THE SOURCE(S) OF VOCS IN STREAM A AS WELL AS DELINEATING DISTRIBUTION OF VOC COMPONENTS. SIMILAR SAMPLING AND ANALYSIS WILL BE UNDERTAKEN FOR STREAMS B AND C WHICH HAVE NOT BEEN THE SUBJECT OF QUANTITATIVE INVESTIGATION TO DATE. THE SURFACE WATER STUDY IS DESIGNED TO CHARACTERIZE SURFACE WATER FLOW WITHIN THE STUDY AREA TO BETTER DEFINE PREFERRED ZONES OF GROUND WATER DISCHARGE AND CONTAMINANT MOVEMENT.

C. SUMMARY OF SITE RISKS

TRICHLOROETHYLENE, DICHLOROETHYLENE, AND VINYL CHLORIDE ARE CONSIDERED THE MAIN CONTAMINANTS OF CONCERN AT THIS SITE. ACUTE INHALATION EXPOSURE TO TCE CAUSES CENTRAL NERVOUS SYSTEM DEPRESSION. TCE IS CLASSIFIED AS A PROBABLE HUMAN CARCINOGEN. VINYL CHLORIDE IS CLASSIFIED AS A HUMAN CARCINOGEN.

POTENTIAL EXPOSURE PATHWAYS TO HUMANS FROM THE USE OF CONTAMINATED GROUNDWATER INCLUDE:

- INGESTION OF GROUND WATER
- INHALATION OF VOLATILE CHEMICALS RELEASED DURING WATER USE
  DIRECT DERMAL CONTACT WITH CONTAMINATED WATER

PERSONS AT RISK OF EXPOSURE TO THE CONTAMINANTS IN GROUNDWATER INCLUDE THOSE WHO HAVE AND USE CONTAMINATED OR THREATENED PRIVATE WELLS. TABLES 2 AND 3 WERE DEVELOPED AFTER A REVIEW OF THE CIBA-GEIGY RESIDENTIAL WELL SAMPLING RESULTS OF AUGUST 1985 NEAR THE KIMBERTON SITE. OF THE TWELVE VOLATILES ASSAYED, THREE ARE OF TOXICOLOGICAL CONCERN:

TCE	TRICHLOROETHYLENE
DCE	DICHLOROETHYLENE
VC	VINYL CHLORIDE (CHLOROETHYLENE).

THESE THREE CHLORINATED ETHYLENES HAVE CARCINOGENIC POTENCIES WHICH VARY OVER THREE ORDERS OF MAGNITUDE:

	10-6 CANCER RISK (PPB)	TCE EQUIVALENCE
TCE	2.7	1
DCE	0.033	82
VC	0.015	180

THAT IS, MOLECULE FOR MOLECULE, VC IS 180 TIMES AS POTENT IN CANCER INDUCTION AS TCE. HENCE, 10 PPB CONTAMINATION WITH VC IS MORE CARCINOGENIC THAN 1000 PPB CONTAMINATION WITH TCE.

IN THE FOLLOWING ANALYSIS, CONTAMINATION BY TCE, DCE AND VC FOR THE MOST SEVERELY AFFECTED WELLS IS EXPRESSED AS MULTIPLES OF 10-6 RISKS AND ADDED TOGETHER FOR A SUMMATION OF CARCINOGENIC RISK. SIX STATIONS EXCEED A CUMULATIVE 10-6 MULTIPLE RISK OF 500 (I.E., INDIVIDUAL RISK IS OVER 5 PER 10,000). THREE ADDITIONAL STATIONS HAVE EVEN HIGHER CUMULATIVE RISKS (0.1, 0.5 AND 0.7 PERCENT INDIVIDUAL RISKS) (SEE TABLE 2).

IN ADDITIONAL TO THESE 9 STATIONS WITH HIGH CUMULATIVE RISKS, THERE ARE SEVERAL STATIONS WITH MARGINAL RISK (SEE TABLE 3).

#CRH
VI. COMMUNITY RELATIONS HISTORY

THE MAIN COMMUNITY CONCERNS FOR THE AFFECTED RESIDENTS AND BUSINESSES REVOLVE AROUND THE ISSUES OF:

1. GROUNDWATER CONTAMINATION ON AND OFF-SITE
2. QUALITY OF ALTERNATE WATER SUPPLIES
3. DESIRE OF AFFECTED RESIDENTS TO REMAIN ON PRIVATE WELLS

#RAO
VII. REMEDIAL ALTERNATIVE OBJECTIVES

THE MAJOR OBJECTIVE OF THE REMEDIAL ACTION TAKEN AT THE KIMBERTON SITE IS TO PROVIDE A SAFE DRINKING AND CONTACT WATER SOURCE TO THOSE IMPACTED BY THE GROUNDWATER CONTAMINATION. BASED ON THIS OBJECTIVE VARIOUS MITIGATION AND SOURCE CONTROL TECHNOLOGIES WERE SCREENED TO PROVIDE A LIMITED NUMBER OF TECHNOLOGIES APPLICABLE TO REMEDIAL ACTION AT THE SITE. THE CRITERIA USED IN THIS DECISION MAKING PROCESS ARE THE NINE EVALUATION CRITERIA AS SPECIFIED IN SECTION 121 OF SARA.

#DA
VIII. DESCRIPTION OF THE ALTERNATIVES

SUMMARY OF REMEDIAL ALTERNATIVES

THE CENTER FOR DISEASE CONTROL (CDC) HAS PREVIOUSLY REVIEWED THE INITIAL SAMPLING DATA COLLECTED BY CIBA-GEIGY IN AUGUST 1985 WHICH INCLUDED 67 RESIDENTIAL AND COMMERCIAL ESTABLISHMENTS. CDC AT THAT TIME CERTIFIED 12 WELLS AS BEING UNFIT FOR HUMAN CONSUMPTION AND ALSO SUPPORTED ALTERNATIVE WATER SUPPLIES AND ADDITIONAL MONITORING WHICH HAD ALREADY BEEN INITIATED BY PADER. THE SUPPLEMENTAL REMEDIAL

INVESTIGATION IS CONTINUING TO FULLY IDENTIFY THE CONTAMINANT SOURCE(S) AS WELL AS THE FULL EXTENT OF GROUNDWATER CONTAMINATION. THE FINDINGS OF THIS SUPPLEMENTAL REMEDIAL INVESTIGATION WILL BE ADDRESSED IN A SUBSEQUENT PROPOSED REMEDIAL ACTION PLAN.

THREE ALTERNATIVES WERE SPECIFICALLY DEVELOPED TO ADDRESS THE HEALTH RISK TO THOSE RESIDENTS WHO MAY CONTINUE TO UTILIZE CONTAMINATED PRIVATE WELLS. THESE ALTERNATIVES WERE IDENTIFIED AND EVALUATED ACCORDING TO SPECIFIC CRITERIA REQUIRED BY CERCLA.

NO ACTION

THE NCP REQUIRES THAT THE NO-ACTION ALTERNATIVE (I.E. NO TREATMENT) BE CONSIDERED TO PROVIDE A WORSE CASE BASIS FOR COMPARISON WITH OTHER ALTERNATIVES. TO NOT CONTINUE THE CURRENT TREATMENT PROGRAM WOULD NOT BE PROTECTIVE OF HUMAN HEALTH IN THE SHORT AND LONG-TERM. THE PUBLIC HEALTH PROBLEM WOULD CONTINUE INTO THE FORESEEABLE FUTURE.

ALTERNATIVE 1: NO FURTHER ACTION

UNDER THIS ALTERNATIVE, RESIDENTIAL AND COMMERCIAL ESTABLISHMENTS HAVING CONTAMINATED WELLS WOULD CONTINUE TO RECEIVE TREATMENT ON AN INDIVIDUAL BASIS BY FILTRATION UTILIZING GRANULAR ACTIVATED CARBON ADSORPTION. TWO ADDITIONAL COMMERCIAL ESTABLISHMENTS WOULD CONTINUE TO RECEIVE ALTERNATE WATER IN BELOW GRADE STORAGE TANKS. A GROUNDWATER MONITORING PROGRAM WOULD ALSO CONTINUE WHICH ALLOWS PERIODIC REASSESSMENT OF THE EXTENT OF CONTAMINATION AND THE CONCENTRATIONS OF HAZARDOUS SUBSTANCES CONTAINED IN THE GROUNDWATER. BOTH TREATMENT AND MONITORING ARE BEING PERFORMED BY CIBA-GEIGY AND MONSEY IN ACCORDANCE WITH A CONSENT ORDER WITH PADER. BASED UPON A REVIEW OF CURRENT VOLATILE ORGANIC CHEMICAL ANALYTICAL DATA, THIS TECHNOLOGY HAS SERVED TO REDUCE TO BELOW DETECTABLE LEVELS THE HAZARDOUS SUBSTANCES FOUND IN THE GROUNDWATER OBTAINED FROM CONTAMINATED WELLS.

- ESTIMATED ANNUAL COSTS: $250,000 - 300,000
- ESTIMATED IMPLEMENTATION TIME FRAME: 2-30 YEARS
- PRESENT WORTH: $3,850,000

A HUMAN HEALTH EVALUATION WAS PERFORMED AND IT WAS DETERMINED THAT IN SEVERAL INSTANCES TRICHLOROETHYLENE, DICHLOROETHYLENE AND VINYL CHLORIDE EXCEEDED ACCEPTABLE CONCENTRATION LEVELS AT THE CONTAMINATED WELLS PRIOR TO TREATMENT. HUMAN EXPOSURE TO THESE CONTAMINANTS IN GROUNDWATER MAY LEAD TO ADVERSE HEALTH EFFECTS. FOLLOWING TREATMENT, THE WATER FALLS WITHIN ACCEPTABLE LEVELS FOR ALL 3 CONTAMINANTS. THEREFORE, THIS ALTERNATIVE IS APPROPRIATE BECAUSE IT WOULD BE PROTECTIVE OF HUMAN HEALTH. THIS IS AN INTERIM REMEDY AND WILL BE REEVALUATED ONCE THE FULL EXTENT OF THE GROUNDWATER CONTAMINATION HAS BEEN DEFINED AND THE SOURCE REMEDIATION ALTERNATIVES HAVE BEEN EVALUATED. A RANGE OF TWO TO THIRTY YEARS HAS BEEN ESTIMATED AS THE LENGTH OF TIME THAT RESIDENTS AND COMMERCIAL ESTABLISHMENTS WILL NEED TO USE AN ALTERNATE WATER SOURCE FOR COSTING PURPOSES.

ALTERNATIVE 2: TEMPORARY DRINKING WATER

THE USE OF A TEMPORARY DRINKING WATER SOURCE FOR POTABLE WATER (I.E. BOTTLED WATER) IS A POTENTIAL ALTERNATIVE TO BE IMPLEMENTED UNTIL SUCH TIME THAT A PERMANENT ALTERNATIVE WATER SUPPLY CAN BE PROVIDED FOR THE RESIDENTS AND COMMERCIAL ESTABLISHMENTS OR THE CONTAMINANT PLUME HAS BEEN REMEDIATED. A RANGE OF TWO TO THIRTY YEARS HAS BEEN ESTIMATED AS THE LENGTH OF TIME THAT RESIDENTS AND COMMERCIAL ESTABLISHMENTS WILL NEED TO USE AN ALTERNATE DRINKING WATER SOURCES FOR COSTING PURPOSES.

BOTTLED WATER CAN BE SUPPLIED THROUGH DELIVERY TO EACH OF THE 23 AFFECTED LOCATIONS. THE AVERAGE DAILY DEMAND FOR EACH RESIDENCE WAS ESTABLISHED FOR DRINKING AND COOKING PURPOSE ONLY. TEMPORARY SUPPLY TO MEET ALL DOMESTIC WATER NEEDS IS IMPRACTICAL SINCE A MAJORITY OF BOTTLED WATER VENDORS SUPPLY FIVE OR SIX GALLON STORAGE CONTAINERS

MOUNTED ON A FREE-STANDING DISPENSER (BULK STORAGE AND DISPENSING FACILITIES FOR PURCHASED WATER WOULD BE REQUIRED TO PROVIDE ALTERNATE CONTACT WATER FOR EACH RESIDENCE). THEREFORE, UNDER ALTERNATIVE 2, ALL OTHER DOMESTIC WATER NEEDS (I.E. SANITARY, BATHING, WASHING, ETC.) WOULD CONTINUE TO BE MET THROUGH THE EXISTING CONTAMINATED WELL SUPPLIES.

THE PROVISION OF A TEMPORARY WATER SUPPLY TO MEET DRINKING AND COOKING NEEDS WOULD REDUCE HEALTH RISKS RESULTING FROM THE INGESTION OF CONTAMINATED WELL WATER. HOWEVER, RISKS ASSOCIATED WITH AIRBORNE AND DERMAL EXPOSURE WOULD CONTINUE. THE MAGNITUDE OF THE HEALTH RISK FROM INHALATION AND DERMAL ABSORPTION IS EXPECTED TO BE COMPARATIVELY SMALL FOR A TWO-YEAR IMPLEMENTATION PERIOD AND WOULD INCREASE PROPORTIONATELY WITH INCREASED EXPOSURE. FOR COSTING PURPOSES THE RANGE OF TWO TO THIRTY YEARS HAS BEEN USED.

ESTIMATED ANNUAL COSTS:	$130,000
ESTIMATED TIME FRAME:	2-30 YEARS
PRESENT WORTH:	$2,002,000

ALTERNATIVE 3: WATER COMPANY SERVICE CONNECTIONS AND WATER-EXTENSION (PUBLIC WATER SUPPLY)

BOTH THE PHOENIXVILLE SYSTEM AND CITIZENS UTILITY CURRENTLY SUPPLY WATER TO A PORTION OF THE RESIDENCES IN THE KIMBERTON AREA.

NEITHER COMPANY'S EXISTING WATER DISTRIBUTION SYSTEMS CURRENTLY EXTEND TO THE AREA IN WHICH THE CONTAMINATED WELLS ARE LOCATED. ADDRESSING THE PROBLEM OF THE CONTAMINATED RESIDENTIAL WELLS BY REPLACEMENT WITH A PUBLIC WATER SUPPLY WOULD REQUIRE THE EXTENSION OF THE WATER SUPPLY SERVICE SYSTEM(S).

THE FACILITIES TO EXTEND THE WATER SYSTEM(S) INCLUDE APPROXIMATELY 8,000 FEET OF WATER MAIN AND 23 SERVICE CONNECTIONS. THE LOCATION OF WATER MAINS AND APPURTENANCES FOR THE WATER SERVICE WOULD BE FINALIZED DURING THE DESIGN PHASE.

THE IMPLEMENTATION OF THIS ALTERNATIVE WOULD NECESSITATE ABANDONMENT AND SEALING OF THE INDIVIDUAL RESIDENTIAL WELLS IN ACCORDANCE WITH THE PADER STANDARD SPECIFICATIONS FOR SEALING FOR ABANDONED WELLS.

EXTENSION OF THE EXISTING SYSTEM IS TECHNICALLY FEASIBLE AND IMPLEMENTABLE, HOWEVER, SOME MEMBERS OF THE COMMUNITY PREFER TO CONTINUE USING THEIR OWN PRIVATE WELLS CONTAINING THE CARBON FILTER SYSTEMS. THE CAPITAL COST FOR EXPANDING THE WATER COMPANY SYSTEM(S) IS ESTIMATED AT $1,300,000. THE PHYSICAL EXPANSION OF THESE FACILITIES COULD BE IMPLEMENTED IN SIX TO NINE MONTHS INCLUDING DESIGN, APPROVAL, AND CONSTRUCTION OF THE SYSTEM. SIX ADDITIONAL MONTHS ARE NECESSARY FOR ADMINISTRATIVE PURPOSES, SUCH AS SECURING CONTRACTS.

IMPLEMENTATION OF THIS ALTERNATIVE WOULD COMPLETELY ELIMINATE RISK DUE TO EXPOSURE TO CONTAMINATED GROUND WATER OF RESIDENTS USING THE CONTAMINATED GROUNDWATER FOR DRINKING AND CONTACT WATER. IT IS A VIABLE ALTERNATIVE AND REPRESENTS A PERMANENT SOLUTION FOR PROVIDING A DRINKING WATER SOURCE THAT MEETS ALL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH.

- ESTIMATED ANNUAL O&M COSTS:	- 0 -
- ESTIMATED TIME FRAME:	1-2 YEARS
- PRESENT WORTH:	$1,300,000

#DEA
IX. A. DESCRIPTION OF MAJOR ARARS

FEDERAL

SAFE DRINKING WATER ACT - MCLS

CLEAN WATER ACT	- AMBIENT WATER QUALITY CRITERIA
STATE	
PENNSYLVANIA CLEAN STREAMS LAW - SECTION 402	- AMBIENT WATER QUALITY STANDARDS
PENNSYLVANIA RULES AND REGULATIONS TITLE 25 CHAPTER 93	

B. ADDITIONAL REQUIREMENTS FOR PROTECTIVENESS

THE SELECTED SITE REMEDY MUST CONSIDER AND BE CONSISTENT WITH THE FOLLOWING:

FEDERAL EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT 40 C.F.R. PART 6, APPENDIX A	ACTION TO AVOID ADVERSE EFFECTS, MINIMIZE POTENTIAL HARM, RESTORE AND PRESERVE NATURAL AND BENEFICIAL VALUE.
FEDERAL EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS, 40 C.F.R. PART 6, APPENDIX A	ACTION TO MINIMIZE DESTRUCTION, LOSS, OR DEGRADATION OF WETLANDS.
FEDERAL CLEAN WATER ACT	DIFFERENTIAL GROUND-WATER POLICY CLASS IIA AQUIFER.
NEW JERSEY COASTAL PLAIN SOLE SOURCE AQUIFER	ACTION TO MINIMIZE ADVERSE AQUIFER IMPACTS

#CA
X. COMPARATIVE ANALYSIS

ALTERNATIVE NUMBER 1 INCLUDES THE CONTINUED PROVISION OF AN ALTERNATE WATER SUPPLY (EITHER BY CARBON FILTRATION TREATMENT OR BELOW GRADE STORAGE TANK) FOR ALL WATER NEEDS (CONTACT AND DRINKING USES) AND CONTINUED MONITORING OF THOSE IMPACTED WELLS. IN ADDITION, THIS ALTERNATIVE IS PROTECTIVE OF HUMAN HEALTH, COMPLIES WITH THE IDENTIFIED ARARS, REDUCES TOXICITY, IS IMPLEMENTABLE AND PROVIDES THE MOST COST EFFECTIVE SOLUTION FOR THE SHORT-TERM SINCE THE SOURCE OF THIS CONTAMINATION IS TO BE ULTIMATELY REMEDIATED. THIS ALTERNATIVE HAS BEEN ACCEPTED BY THE STATE.

ALTERNATIVE NUMBER 2 PROVIDES FOR CONTINUED USE OF CONTAMINATED SUPPLIES, BUT INCLUDES THE PROVISION OF AN ALTERNATE DRINKING AND COOKING WATER SUPPLY BY BOTTLED WATER AND CONTINUED MONITORING OF THOSE IMPACTED WELLS. THESE PROVISIONS WOULD REDUCE HEALTH RISKS RESULTING FROM THE INGESTION OF CONTAMINATED WELL WATER, HOWEVER, RISKS ASSOCIATED WITH AIRBORNE AND DERMAL EXPOSURE WOULD CONTINUE. THIS ALTERNATIVE IS IMPLEMENTABLE, BUT DOES NOT REDUCE THE TOXICITY, MOBILITY OR VOLUME OF CONTAMINANTS, WOULD BE EFFECTIVE BY ELIMINATING INGESTION EXPOSURE IN THE SHORT AND LONG-TERM AND WOULD COMPLY WITH IDENTIFIED ARARS. HOWEVER, BOTH THE CONTACT AND INHALATION EXPOSURES WOULD REMAIN SO THEREFORE, THIS REMEDY WOULD NOT BE PROTECTIVE IN EITHER THE SHORT OR LONG-TERM.

ALTERNATIVE NUMBER 3 REQUIRES THE PROVISION FOR A PUBLIC WATER SUPPLY AS THE ALTERNATE DRINKING AND CONTACT WATER SOURCE. THIS ALTERNATIVE WOULD BE PROTECTIVE OF HUMAN HEALTH, COMPLIES WITH SPECIFIED ARARS, IS EFFECTIVE BOTH LONG AND SHORT TERM, IMPLEMENTABLE AND COST EFFECTIVE. IT DOES NOT, HOWEVER, REDUCE THE TOXICITY, MOBILITY OR VOLUME OF THE CONTAMINANTS. IN ADDITION, FURTHER INFORMATION NEEDS TO BE SUPPLIED BY

THE SUPPLEMENTAL REMEDIAL INVESTIGATION BEFORE THE TOTAL IMPACT OF THIS OPTION CAN BE ASSESSED (I.E. AREA-WIDE DEVELOPMENT AND WATER NEEDS AND THE IMPACT OF PUMPING AND TREATING GROUNDWATER ON-SITE ON THE LOCAL GROUNDWATER FLOW PATTERN).

#DSC
XI. DOCUMENTATION OF SIGNIFICANT CHANGES

NO SIGNIFICANT CHANGES TO THE PREFERRED ALTERNATIVE PRESENTED IN THE PROPOSED PLAN HAVE OCCURRED.

#SRA
XII. SELECTED REMEDIAL ALTERNATIVE

A. EVALUATION CRITERIA

SECTION 121 OF SARA AND THE CURRENT VERSION OF THE NATIONAL CONTINGENCY PLAN (NCP) (50 FED. REG. 47912, NOVEMBER 20, 1985) ESTABLISH A VARIETY OF REQUIREMENTS PERTAINING TO REMEDIAL ACTIONS UNDER CERCLA. THE FOLLOWING NINE CRITERIA WERE USED IN THE EVALUATION OF THE REMEDIAL ACTION ALTERNATIVES AT KIMBERTON:

- OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT ADDRESSES WHETHER OR NOT A REMEDY PROVIDES ADEQUATE PROTECTION AND DESCRIBES HOW RISKS POSED THROUGH EACH PATHWAY ARE ELIMINATED, REDUCED OR CONTROLLED THROUGH TREATMENT, ENGINEERING CONTROLS, OR INSTITUTIONAL CONTROLS.

- COMPLIANCE WITH ARARS ADDRESSES WHETHER OR NOT A REMEDY WILL MEET ALL OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS OF OTHER FEDERAL AND STATE ENVIRONMENTAL STATUTES AND/OR PROVIDES GROUND FOR INVOKING A WAIVER.

- LONG-TERM EFFECTIVENESS AND PERMANENCE REFERS TO THE ABILITY OF A REMEDY TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENTAL OVER TIME ONCE CLEANUP GOALS HAVE BEEN MET.

- REDUCTION OF TOXICITY, MOBILITY OR VOLUME IS THE ANTICIPATED PERFORMANCE OF THE TREATMENT TECHNOLOGIES A REMEDY MAY EMPLOY.

- SHORT-TERM EFFECTIVENESS ADDRESSES THE PERIOD OF TIME NEEDED TO ACHIEVE PROTECTION, AND ANY ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT MAY BE POSED DURING THE CONSTRUCTION AND IMPLEMENTATION PERIOD UNTIL CLEANUP GOALS ARE ACHIEVED.

- IMPLEMENTABILITY IS THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF A REMEDY, INCLUDING THE AVAILABILITY OF MATERIALS AND SERVICES NEEDED TO IMPLEMENT A PARTICULAR OPTION.

- COST INCLUDES ESTIMATED CAPITAL AND OPERATION AND MAINTENANCE COSTS AND NET PRESENT WORTH COSTS.

- STATE ACCEPTANCE INDICATES WHETHER, BASED ON ITS REVIEW OF RI/FS AND PROPOSED PLAN, THE STATE CONCURS ON, OPPOSES, OR HAS NO COMMENT ON THE PREFERRED ALTERNATIVE AT THE PRESENT TIME.

- COMMUNITY ACCEPTANCE WILL BE ASSESSED IN THE RECORD OF DECISION FOLLOWING A REVIEW OF THE PUBLIC COMMENTS RECEIVED ON THE ADMINISTRATIVE RECORD AND PROPOSED PLAN.

B. DETERMINATION OF PREFERRED REMEDIAL ALTERNATIVE

THE PREFERRED ALTERNATIVE IS ALTERNATIVE NUMBER 1. THIS ALTERNATIVE SELECTS CONTINUED USE OF INDIVIDUAL WELL TREATMENT BY GRANULAR ACTIVATED CARBON ADSORPTION AS REQUIRED BY PADER'S 1986 CONSENT ORDER WITH THE PRPS.

THE PREFERRED ALTERNATIVE PROVIDES COMPLETE PROTECTION, IN THE SHORT-TERM, TO GROUNDWATER USERS BY TREATMENT OF THE WATER AT THE INDIVIDUAL WELLS. LONG-TERM EFFECTIVENESS WILL BE OBTAINED BY IMPLEMENTING ADDITIONAL REMEDIES IDENTIFIED IN THE NEXT OPERABLE UNIT WHICH WILL BE AVAILABLE FOR PUBLIC COMMENT ONCE DEVELOPED. THE PRPS IDENTIFIED AT THIS SITE WILL CONTINUE TO MAINTAIN CARBON FILTERS AND WATER VIA BELOW GRADE TANKS WHICH PROVIDES BOTH DRINKING AND CONTACT WATER, WHICH UPON CHEMICAL ANALYSIS ACHIEVES THE CURRENT STANDARDS.

EPA, IN CONSULTATION WITH PADER, HAS MADE A PRELIMINARY DETERMINATION THAT THE PREFERRED ALTERNATIVE PROVIDES THE BEST BALANCE OF TRADEOFF WITH RESPECT TO THE NINE CRITERIA. THE PREFERRED ALTERNATIVE IS ANTICIPATED TO MEET THE FOLLOWING STATUTORY REQUIREMENTS TO:

- PROTECT HUMAN HEALTH AND THE ENVIRONMENT
- ATTAIN ARARS
- BE COST-EFFECTIVE
- UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT (OR RESOURCE RECOVERY) TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

IN SUMMARY, AT THIS TIME THE PREFERRED ALTERNATIVE IS BELIEVED TO PROVIDE THE BEST BALANCE OF TRADE-OFFS AMONG ALTERNATIVES WITH RESPECT TO THE CRITERIA USED TO EVALUATE REMEDIES. BASED ON THE INFORMATION AVAILABLE AT THIS TIME, THEREFORE, EPA AND PADER BELIEVE THE PREFERRED ALTERNATIVE WOULD BE PROTECTIVE, WOULD ATTAIN ARARS, WOULD BE COST-EFFECTIVE, AND WOULD UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

SCHEDULE

THE ANTICIPATED SCHEDULE FOR COMPLETION OF THE SUPPLEMENTAL REMEDIAL INVESTIGATION AND FEASIBILITY STUDY IS SPRING 1989. REMEDIAL DESIGN AND CONSTRUCTION FOR THE FINAL REMEDY IS ANTICIPATED TO COMMENCE IN FALL 1989.

C. STATEMENT OF FINDINGS REGARDING WETLANDS AND FLOODPLAINS

THE FOCUS OF THIS DECISION IS TO PROVIDE AN INTERIM REMEDIAL ALTERNATIVE FOR THE CONTAMINATED GROUNDWATER, DEFINED AS THE FIRST OPERABLE UNIT FOR THIS SITE. FURTHER WORK AT THIS SITE WILL CONSIDER THE IMPACT OF CONTAMINATION ON WETLANDS, FLOODPLAINS AND SURFACE WATER. A WETLANDS ASSESSMENT WILL BE PERFORMED DURING THE NEXT PHASE OF THIS PROJECT.

#SD
XIII. THE STATUTORY DETERMINATIONS

A. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE SELECTED REMEDY WILL REDUCE AND CONTROL THE AMOUNT OF GROUNDWATER CONTAMINATION WHICH WILL ENSURE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. NO UNACCEPTABLE SHORT AND LONG-TERM RISKS OR CROSS-MEDIA IMPACT WILL BE CAUSED BY IMPLEMENTATION OF THE REMEDY.

BASED ON A REVIEW OF VOLATILE ORGANIC CHEMICAL ANALYTICAL DATA FROM COLLECTED GROUNDWATER SAMPLES FROM IMPACTED OFF-SITE WELLS AND GIVEN THE VINYL CHLORIDE CONCENTRATIONS IN THE UNTREATED GROUNDWATER, THE USE OF GRANULAR ACTIVATED CARBON FILTERS HAS PROVEN TO BE SUCCESSFUL IN REDUCING THE CONCENTRATIONS OF THE CONTAMINANTS OF CONCERN (TCE, DCE, VC) TO NON-DETECTABLE LEVELS.

B. ATTAINMENT OF ARARS

THE SELECTED REMEDY WILL ATTAIN THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND ARE AS FOLLOWS:

FEDERAL

SAFE DRINKING WASTE ACT	- MCLS
CLEAN WATER ACT	- AMBIENT WATER QUALITY CRITERIA

STATE

PENNSYLVANIA CLEAN STREAMS LAW - SECTION 402 STANDARDS	- AMBIENT WATER QUALITY

ADDITIONAL REQUIREMENTS FOR PROTECTIVENESS

THE SELECTED SITE REMEDY IS CONSISTENT WITH THE FOLLOWING:

FEDERAL EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT 40 C.F.R. PART 6, APPENDIX A	- ACTION TO AVOID ADVERSE EFFECTS, MINIMIZE POTENTIAL HARM, RESTORE AND PRESERVE NATURAL BENEFICIAL VALUE.
FEDERAL EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS, 40 C.F.R. PART 6, APPENDIX A	- ACTION TO MINIMIZE DESTRUCTION, LOSS, OR DEGRADATION OF WETLANDS.
FEDERAL CLEAN WATER ACT	- DIFFERENTIAL GROUNDWATER POLICY CLASS IIA AQUIFER
NEW JERSEY COASTAL PLAIN SOLE SOURCE AQUIFER	- ACTION TO MINIMIZE AQUIFER IMPACTS

C. COST-EFFECTIVENESS

THE SELECTED REMEDY PROVIDES OVERALL EFFECTIVENESS COMMENSURATE TO ITS COSTS SUCH THAT IT REPRESENTS VALUE FOR THE MONEY. THE PRPS ARE MAINTAINING THE CURRENT SYSTEMS DESCRIBED IN THE SELECTED REMEDIAL ALTERNATIVE IN COMPLIANCE WITH THE PADER CONSENT ORDER AND AGREEMENT. THIS IS A COST SAVINGS TO THE GOVERNMENT.

D. UTILIZATION OF PERMANENT SOLUTIONS EMPLOYING ALTERNATIVE TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

THE SELECTED REMEDY IS THE MOST APPROPRIATE SOLUTION FOR THIS OPERABLE UNIT AND REPRESENTS THE MAXIMUM EXTENT TO WHICH PERMANENT SOLUTIONS AND TREATMENT CAN BE PRACTICABLE UTILIZED.

E. PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE PREFERENCE IS SATISFIED SINCE TREATMENT IS THE PRINCIPAL ELEMENT OF THE CHOSEN ALTERNATIVE.

#TA

TABLE 1

CHEMICAL SPECIFIC ARARS

CHEMICAL	FEDERAL ARARS (UG/1)	METHOD/SOURCE
TOLUENE	2,000.0	MCLG
CHLOROBENZENE	60.0	MCLG
VINYL CHLORIDE	2.0	MCL
CHLOROETHANE	19,000.0	EPA
METHYLENE CHLORIDE	47.0	***
1,1-DICHLOROETHYLENE	7.0	MCL
1,1-DICHLOROETHANE	5.06	EPA
TRANS-1,2-DICHLOROETHYLENE	5.06	MCLG
CHLOROFORM	100.0	MCL(1)
1,2- DICHLOROETHANE	5.0	MCL
1,1,1-TRICHLOROETHANE	200.00	MCL
CARBON TETRACHLORIDE	5.0	MCL
1,2-DICHLOROPROPANE	6.28	EPA
TRANS-1,3-DICHLOROPROPENE	10.5	RFD
TRICHLOROETHYLENE (TCE)	5.0	MCL
TETRACHLOROETHENE	6.9	***
BROMOMETHANE	35.0	RFD
DIBROMOCHLOROMETHANE	100.0	MCL

MCL - MAXIMUM CONTAMINANT LEVELS

MCLG - MAXIMUM CONTAMINANT LEVEL GOALS

EPA - RECOMMENDED BY EPA

RFD - REFERENCE DOSE

*** - EPA SUPERFUND PUBLIC HEALTH EVALUATION MANUAL, MDER, WASHINGTON, D.C. EPA 54011 - 861060 (OSWER DIRECTIVE 9,285.4-1), OCTOBER 1986

(1) - THIS IS MCL FOR TOTAL TRIHALOMETHANES.

(2) - PADER ARAR

TABLE 2

RISK ASSESSMENT OF HIGHLY CONTAMINATED WELLS (KIMBERTON)

NAME	TCE*	DCE	VC	TOTAL**		INDIVIDUAL RISK
REV. MUNZ		182		182		
C. AMIDON	230	333		563		
E. BLANK	259	485	267	1011		0.1% C.
R. DAVIS	248	424		672		
D. DORAN	226	545		771		
J. EFFGEN	215	455		670		
ALTEMOSE	107	242		349		
P. K. EMERY	667	1273	4933	6873		0.7% D.
KULP	1041	606	3333	4980		0.5% M.
LUDWICK	256	364		610	(BEFORE GAC)	
MOORE/YEAGER	222	515		737		
H. E. PIFER	285			285		
C. WILSON	48	91		139		
T. PFAU		121		121		

* VALUES EXPRESSED AS MULTIPLE OF 10-6 (HENCE, CANCERS PER MILLION).
** CUMULATIVE CANCERS PER MILLION LIFETIME CONSUMERS OF RESPECTIVE WATER.

ALL OF THE ABOVE WELLS REPRESENT GREATER THAN 10-4 RISK AND MUST BE AVOIDED IMMEDIATELY FOR DRINKING AND BATHING. IN ADDITION, SUSPENSION OF WATER FOR OTHER DOMESTIC USE IN THE THREE CASES WHERE INDIVIDUAL RISK EXCEED 10-3 (0.1%) WOULD BE RECOMMENDED.

TABLE 3

RISK ASSESSMENT OF MODERATELY CONTAMINATED WELLS

NAME	TCE	DCE	VC	TOTAL
G. EPPS		91		91
C. FISHER		61		61
K. PHILLIPS	5	61		66
E. RITTENBAUGH		61		61
D. SANDS		91		91

APPENDIX B

RESPONSIVENESS SUMMARY FOR THE
PROPOSED REMEDIAL ACTION PLAN
AT THE KIMBERTON SUPERFUND SITE
EAST PIKELAND TOWNSHIP, CHESTER COUNTY
PENNSYLVANIA

#RS

I. INTRODUCTION

THE KIMBERTON SITE OCCUPIES APPROXIMATELY ONE ACRE AND IS LOCATED IN THE NORTHEASTERN PORTION OF CHESTER COUNTY IN THE VILLAGE OF KIMBERTON. DOMESTIC AND COMMERCIAL WELL WATER SAMPLES HAVE DETECTED HIGH LEVELS OF CHLORINATED HYDROCARBON CHEMICAL CONTAMINATION. A SOURCE OF THIS CONTAMINATION HAS BEEN IDENTIFIED AS THE PROPERTY CURRENTLY OWNED BY THE MONSEY CORPORATION WHICH CONTAINED SEVERAL BURIED LAGOONS THAT WERE OPERATED BY CIBA-GEIGY CORPORATION DURING THE 1950'S. AN INVESTIGATION OF THE SITE AND FURTHER SAMPLING STUDIES HAVE REVEALED THE PRESENCE OF ASSORTED VOLATILE ORGANIC COMPOUNDS. THE KIMBERTON SITE WAS ADDED TO THE SUPERFUND NATIONAL PRIORITIES LIST (NPL) IN 1982.

II. SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

A NUMBER OF PUBLIC MEETINGS WERE CONDUCTED DURING 1981-82 BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES AND EPA TO DISCUSS THE RESULTS OF PRELIMINARY WATER SAMPLING AND THE POSSIBLE CLEANUP ACTIONS THAT MAY BE TAKEN. IN COOPERATION WITH PADER, CIBA-GEIGY AND MONSEY PRODUCTS, INC. CONDUCTED ADDITIONAL PUBLIC MEETINGS AND PROVIDED BRIEFINGS TO LOCAL OFFICIALS TO INFORM THEM OF THE SITE INVESTIGATION RESULTS. IN 1985, BOTH COMPANIES ESTABLISHED INTERIM WATER SUPPLIES FOR 23 FAMILIES AND ALSO PROVIDED CARBON ADSORPTION SYSTEMS. IN AUGUST OF 1988, PADER AND EPA NOTIFIED AREA RESIDENTS THAT THE PROPOSED REMEDIAL ACTION PLAN WAS AVAILABLE FOR REVIEW/COMMENT BY PLACING AN ADVERTISEMENT IN THE AUGUST 26, 1988 EDITION OF THE CHESTER COUNTY DAILY LOCAL NEWS. IN ADDITION, THE PROPOSED PLAN WAS MAILED TO ALL CITIZENS IN THE AREA WHOSE NAMES WERE ON THE SITE MAILING LIST. A PUBLIC MEETING TO DISCUSS THE PROPOSED REMEDIAL ACTION PLAN WAS ALSO OFFERED TO AREA REQUESTS. HOWEVER, REQUESTS FOR SUCH A MEETING WERE NEVER RECEIVED.

III. WRITTEN COMMENTS

NEITHER PADER NOR EPA RECEIVED WRITTEN COMMENTS ON THE PROPOSED REMEDIAL ACTION PLAN FOR THE KIMBERTON SUPERFUND SITE.

KIMBERTON SUPERFUND SITE PROPOSED REMEDIAL ACTION PLAN
PRESENTED BY PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES
AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

INTRODUCTION

THIS PROPOSED REMEDIAL ACTION PLAN HAS BEEN PREPARED BY THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES (PADER) AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) AS PART OF PADER AND EPA'S SUPERFUND PUBLIC OUTREACH EFFORTS. THIS PROPOSED PLAN PRESENTS ACTIONS THAT PADER AND EPA HAVE CONSIDERED WITH REGARD TO PUBLIC CONCERN RELATED TO THE KIMBERTON SITE IN THE VILLAGE OF KIMBERTON, CHESTER COUNTY, PENNSYLVANIA. THESE ACTIONS WERE IDENTIFIED BY SEVERAL REMEDIAL INVESTIGATION REPORTS AND WERE EVALUATED BASED ON: 1) THE EXTENT OF THE CONTAMINATION PROBLEM AT THE SITE, 2) THE POTENTIAL RISKS TO THE PUBLIC HEALTH AND THE ENVIRONMENT AND 3) THE STEPS TO BE TAKEN TO CORRECT THE PROBLEM. THIS PROPOSED PLAN IS THE FIRST OF TWO OPERABLE UNITS FOR THIS SITE. THE FIRST UNIT, THE SUBJECT OF THIS PROPOSED PLAN, DEALS WITH SELECTION OF A REMEDY THAT PROVIDES A DRINKING WATER SOURCE FOR CERTAIN LOCATIONS. THE SECOND ALTERNATIVE OPERABLE UNIT IS FOCUSING ON

ELIMINATION/CONTROL OF THIS CONTAMINATION SOURCE.

THE PROPOSED PLAN BEGINS WITH A BRIEF HISTORY OF THE KIMBERTON SITE, FOLLOWED BY A SUMMARY OF EACH OF THE REMEDIAL ALTERNATIVES PADER AND EPA HAVE CONSIDERED FOR DEALING WITH THE GROUNDWATER CONTAMINATION AT THIS SITE, PADER'S AND EPA'S RATIONALE FOR RECOMMENDING AND, IN SOME CASES ELIMINATING ANY ONE OF THESE REMEDIAL ALTERNATIVES IS INCLUDED IN EACH OF THE SUMMARIES. IN ADDITION, THIS PLAN IDENTIFIES THE PRELIMINARY DECISION ON A PREFERRED ALTERNATIVE AND EXPLAINS THE RATIONALE FOR THE PREFERENCE. EPA AND PADER ARE SEEKING PUBLIC COMMENT ON THESE REMEDIAL ALTERNATIVES CURRENTLY UNDER CONSIDERATION. AT THE CONCLUSION OF THIS PROPOSED PLAN, A GLOSSARY OF TERMS THAT MAY BE UNFAMILIAR TO THE GENERAL PUBLIC IS PROVIDED.

SITE DESCRIPTION AND HISTORY

THE VILLAGE OF KIMBERTON IS LOCATED IN THE NORTHEASTERN PORTION OF CHESTER COUNTY, PENNSYLVANIA NEAR THE PHILADELPHIA METROPOLITAN AREA. NUMEROUS DOMESTIC AND COMMERCIAL POTABLE WELL WATER SUPPLIES HAVE BEEN SAMPLED BY THE CHESTER COUNTY HEALTH DEPARTMENT AND ANALYZED BY PADER SINCE JANUARY 1982. HIGH LEVELS OF CHLORINATED HYDROCARBON CHEMICAL CONTAMINATION HAS BEEN DETECTED IN MANY OF THE SAMPLED WELLS. A SOURCE OF THIS CONTAMINATION HAS BEEN IDENTIFIED AS THE PROPERTY CURRENTLY OWNED BY THE MONSEY CORPORATION WHICH CONTAINED SEVERAL BURIED LAGOONS THAT WERE OPERATED BY THE CIBA-GEIGY CORPORATION DURING THE 1950'S (SEE FIGURE 1).

THREE OF THESE LAGOONS HAVE BEEN EXCAVATED WITH CONTAMINATED SOILS BEING REMOVED OFF-SITE. THE LAGOONS ARE IN CLOSE PROXIMITY TO NUMEROUS PRIVATE WATER SUPPLY WELLS AND LESS THAN ONE MILE FROM FRENCH CREEK WHICH IS USED FOR PUBLIC RECREATION AND FISHING. CIBA-GEIGY SAMPLED 67 RESIDENTIAL AND COMMERCIAL ESTABLISHMENTS IN AUGUST 1, 1985 AND FOUND IN SOME OF THESE WELLS VARIOUS CONCENTRATIONS OF TRICHLOROETHYLENE (TCE), 1,2-DICHLOROETHYLENE (DCE) AND VINYL CHLORIDE (VC) WHICH ARE ALL CONSIDERED HAZARDOUS SUBSTANCES ACCORDING TO THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA). CIBA GEIGY AND MONSEY SIGNED A CONSENT ORDER AND AGREEMENT WITH PADER TO PROVIDE CERTAIN RESIDENTIAL AND COMMERCIAL LOCATIONS WITH AN ALTERNATIVE SOURCE OF DRINKING AND CONTACT WATER IN DECEMBER 1986. CIBA GEIGY AND MONSEY IN ADDITION CONTINUE TO MONITOR THESE AND OTHER DESIGNATED LOCATIONS PERIODICALLY ACCORDING TO A PRESCRIBED SAMPLING AND ANALYTICAL PROCEDURES OUTLINED UNDER THE TERMS OF THIS CONSENT ORDER.

THIS SITE WAS EVALUATED THROUGH THE HAZARD RANKING SYSTEM (HRS) AND SUBSEQUENTLY PLACED ON THE NATIONAL PRIORITIES LIST (NPL) A LIST OF HAZARDOUS WASTE SITES TARGETED FOR ACTION UNDER THE SUPERFUND PROGRAM, IN 1982.

COMMUNITY ROLE IN THE SELECTION PROCESS

THIS PROPOSED PLAN IS BEING DISTRIBUTED TO SOLICIT PUBLIC COMMENT REGARDING THE PROPOSED REMEDIAL ALTERNATIVES TO CLEAN UP THE CONTAMINATION AT THIS SITE. DETAILED INFORMATION ON ALL OF THE MATERIAL DISCUSSED HERE MAY BE FOUND IN THE DOCUMENTS CONTAINED IN THE ADMINISTRATIVE RECORD (AR) FOR THE SITE. COPIES OF THESE DOCUMENTS ARE AVAILABLE FOR REVIEW AT THE FOLLOWING INFORMATION REPOSITORY LOCATION:

THE EAST PIKELAND TOWNSHIP MUNICIPAL BUILDING
RAPPS DAM ROAD
KIMBERTON, PA 19442

THE PUBLIC COMMENT PERIOD WILL RUN FROM AUGUST 25, 1988 TO SEPTEMBER 23, 1988. WRITTEN COMMENTS, QUESTIONS AND REQUESTS FOR INFORMATION CAN BE SENT TO:

GENE PINE, PROJECT OFFICER

BUREAU OF WASTE MANAGEMENT
PA DEPT. OF ENVIRONMENTAL
RESOURCES
FULTON BUILDING, 7TH FLOOR
3RD AND LOCUST STREETS
HARRISBURG, PA 17120
717-783-7816

EVALUATION CRITERIA

WITH PADER OVERSIGHT, CIBA GEIGY AND MONSEY ARE CURRENTLY CONDUCTING A REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) OF THE SITE WHICH BEGAN IN 1985 AND IS ANTICIPATED TO BE COMPLETED IN LATE 1988. SEVERAL ALTERNATIVES ADDRESSING WATER SUPPLY HAVE BEEN EVALUATED AGAINST THE FOLLOWING NINE EVALUATION CRITERIA:

- OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT ADDRESSING WHETHER OR NOT A REMEDY PROVIDES ADEQUATE PROTECTION AND DESCRIBES HOW RISKS POSED THROUGH EACH PATHWAY ARE ELIMINATED, REDUCED OR CONTROLLED THROUGH TREATMENT, ENGINEERING CONTROLS, OR INSTITUTIONAL CONTROLS.

- COMPLIANCE WITH ARARS ADDRESSING WHETHER OR NOT A REMEDY WILL MEET ALL OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS OF OTHER FEDERAL AND STATE ENVIRONMENTAL STATUTES AND/OR PROVIDES GROUNDS FOR INVOKING A WAIVER.

- LONG-TERM EFFECTIVENESS AND PERMANENCE REFERRING TO THE ABILITY OF A REMEDY TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER TIME ONCE CLEANUP GOALS HAVE BEEN MET.

- REDUCTION OF TOXICITY, MOBILITY OR VOLUME IS THE ANTICIPATED PERFORMANCE OF THE TREATMENT TECHNOLOGIES A REMEDY MAY EMPLOY.

- SHORT-TERM EFFECTIVENESS ADDRESSES THE PERIOD OF TIME NEEDED TO ACHIEVE PROTECTION, AND ANY ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT MAY BE POSED DURING THE CONSTRUCTION AND IMPLEMENTATION PERIOD UNTIL CLEANUP GOALS ARE ACHIEVED.

- IMPLEMENTABILITY IS THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF A REMEDY, INCLUDING THE AVAILABILITY OF MATERIALS AND SERVICES NEEDED TO IMPLEMENT A PARTICULAR OPTION.

- COST INCLUDES ESTIMATED CAPITAL AND OPERATION AND MAINTENANCE COSTS AND NET PRESENT WORTH COSTS.

- STATE ACCEPTANCE INDICATES WHETHER, BASED ON ITS REVIEW OF RI/FS AND PROPOSED PLAN, THE STATE CONCURS ON, OPPOSES, OR HAS NO COMMENT ON THE PREFERRED ALTERNATIVE AT THE PRESENT TIME.

- COMMUNITY ACCEPTANCE WILL BE ASSESSED IN THE RECORD OF DECISION FOLLOWING A REVIEW OF THE PUBLIC COMMENTS RECEIVED ON THE ADMINISTRATIVE RECORD AND PROPOSED PLAN.

SUMMARY OF REMEDIAL ALTERNATIVES

THE CENTER FOR DISEASE CONTROL (CDC) HAS PREVIOUSLY REVIEWED THE INITIAL SAMPLING DATA COLLECTED BY CIBA-GEIGY IN AUGUST 1985 WHICH INCLUDED 67 RESIDENTIAL AND COMMERCIAL ESTABLISHMENTS. CDC AT THAT TIME CERTIFIED 12 WELLS AS BEING UNFIT FOR HUMAN CONSUMPTION AND ALSO SUPPORTED ALTERNATIVE WATER SUPPLIES AND ADDITIONAL MONITORING WHICH HAD ALREADY BEEN INITIATED BY PADER. THE REMEDIAL INVESTIGATION IS CONTINUING TO FULLY IDENTIFY THE CONTAMINANT SOURCE(S) AS WELL AS THE FULL EXTENT OF GROUNDWATER CONTAMINATION AND WILL BE ADDRESSED IN A SUBSEQUENT PROPOSED REMEDIAL ACTION PLAN.

THREE ALTERNATIVES WERE SPECIFICALLY DEVELOPED TO ADDRESS THE HEALTH RISK TO THOSE RESIDENTS WHO MAY CONTINUE TO UTILIZE CONTAMINATED PRIVATE WELLS. THESE ALTERNATIVES WERE IDENTIFIED AND EVALUATED ACCORDING TO SPECIFIC CRITERIA REQUIRED BY CERCLA.

ALTERNATIVE 1: NO FURTHER ACTION

UNDER THIS ALTERNATIVE, RESIDENTIAL AND COMMERCIAL ESTABLISHMENTS HAVING CONTAMINATED WELLS WOULD CONTINUE TO RECEIVE TREATMENT ON AN INDIVIDUAL BASIS BY FILTRATION UTILIZING GRANULAR ACTIVATED CARBON ADSORPTION. A GROUNDWATER MONITORING PROGRAM WOULD ALSO CONTINUE WHICH ALLOWS PERIODIC REASSESSMENT OF THE EXTENT OF CONTAMINATION AND THE CONCENTRATIONS OF HAZARDOUS SUBSTANCES CONTAINED IN THE GROUNDWATER. BOTH TREATMENT AND MONITORING ARE BEING PERFORMED BY CIBA-GEIGY AND MONSEY IN ACCORDANCE WITH CONSENT ORDER WITH PADER. BASED UPON A REVIEW OF CURRENT GROUNDWATER DATA, THIS TECHNOLOGY HAS SERVED TO REDUCE TO NON-DETECTABLE LEVELS THE HAZARDOUS SUBSTANCES FOUND IN THE GROUNDWATER OBTAINED FROM CONTAMINATED WELLS.

ESTIMATED CONSTRUCTION COSTS: 0
ESTIMATED ANNUAL O&M COSTS: $250,000 - 300,000
ESTIMATED IMPLEMENTATION TIMEFRAME: 2-30 YEARS

A HUMAN HEALTH EVALUATION WAS PERFORMED AND IT WAS DETERMINED IN SEVERAL INSTANCES, TRICHLOROETHYLENE, DICHLOROETHYLENE AND VINYL CHLORIDE EXCEED ACCEPTABLE CONCENTRATION LEVELS. HUMAN EXPOSURE TO THESE CONTAMINANTS IN GROUNDWATER MAY LEAD TO ADVERSE HEALTH EFFECTS. THEREFORE, THIS ALTERNATIVE IS APPROPRIATE BECAUSE IT WOULD BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT. THIS IS AN INTERIM REMEDY AND WILL BE REEVALUATED ONCE THE FULL EXTENT OF THE GROUNDWATER CONTAMINATION HAS BEEN DEFINED AND THE SOURCE REMEDIATION ALTERNATIVES HAVE BEEN EVALUATED.

ALTERNATIVE 2: TEMPORARY DRINKING WATER

THE USE OF A TEMPORARY DRINKING WATER SOURCE FOR POTABLE WATER (I.E. BOTTLED WATER) IS A POTENTIAL ALTERNATIVE TO BE IMPLEMENTED UNTIL SUCH TIME THAT A PERMANENT ALTERNATIVE WATER SUPPLY CAN BE PROVIDED FOR THE RESIDENTS AND COMMERCIAL ESTABLISHMENTS OR THE CONTAMINANT PLUME HAS BEEN REMEDIATED. A RANGE OF TWO TO THIRTY YEARS HAS BEEN ESTIMATED AS THE LENGTH OF TIME THAT RESIDENTS AND COMMERCIAL ESTABLISHMENTS WILL NEED TO USE A TEMPORARY DRINKING WATER SOURCES.

BOTTLED WATER CAN BE SUPPLIED THROUGH DELIVERY TO EACH OF THE 23 AFFECTED LOCATIONS. THE AVERAGE DAILY DEMAND FOR EACH RESIDENCE WAS ESTABLISHED FOR DRINKING AND COOKING PURPOSES ONLY. TEMPORARY SUPPLY TO MEET ALL DOMESTIC WATER NEEDS IS IMPRACTICAL SINCE A MAJORITY OF BOTTLED-WATER VENDORS SUPPLY FIVE OR SIX GALLON STORAGE CONTAINERS MOUNTED ON A FREE-STANDING DISPENSER (I.E., BULK STORAGE AND DISPENSING FACILITIES FOR PURCHASED WATER WOULD BE REQUIRED FOR EACH RESIDENCE). THEREFORE, UNDER ALTERNATIVE 2, ALL OTHER DOMESTIC WATER NEEDS (I.E., SANITARY, BATHING, WASHING, ETC.) WOULD CONTINUE TO BE MET THROUGH THE EXISTING CONTAMINATED WELL SUPPLIES.

THE PROVISION OF A TEMPORARY WATER SUPPLY TO MEET DRINKING AND COOKING NEEDS WOULD REDUCE HEALTH RISKS RESULTING FROM THE INGESTION OF CONTAMINATED WELL WATER. HOWEVER, RISKS ASSOCIATED WITH AIRBORNE AND DERMAL EXPOSURE WOULD CONTINUE. THE MAGNITUDE OF THE HEALTH RISK FROM INHALATION AND DERMAL ABSORPTION IS EXPECTED TO BE COMPARATIVELY SMALL FOR A TWO-YEAR IMPLEMENTATION PERIOD AND WOULD INCREASE PROPORTIONATELY WITH INCREASED TIME OF EXPOSURE.

ESTIMATED CONSTRUCTION COST: - 0 -
ESTIMATED ANNUAL O&M $130,000
ESTIMATED TIMEFRAME: 2-30 YEARS

ALTERNATIVE 3: WATER COMPANY SERVICE CONNECTIONS AND WATER-MAIN EXTENSION (PUBLIC WATER SUPPLY)

BOTH THE PHOENIXVILLE SYSTEM AND CITIZENS UTILITY CURRENTLY SUPPLY WATER TO A PORTION OF THE RESIDENCES IN THE KIMBERTON AREA.

THE BOTH COMPANY'S EXISTING WATER DISTRIBUTION SYSTEMS DO NOT CURRENTLY EXTEND TO THE AREA IN WHICH THE CONTAMINATED WELLS ARE LOCATED. ADDRESSING THE PROBLEM OF THE CONTAMINATED RESIDENTIAL WELLS BY REPLACEMENT WITH A PUBLIC WATER SUPPLY WOULD REQUIRE THE EXTENSION OF THE WATER SUPPLY SERVICE SYSTEM(S).

THE FACILITIES TO EXTEND THE WATER SYSTEM(S) INCLUDE APPROXIMATELY 8,000 FEET OF WATER MAIN AND 23 SERVICE CONNECTIONS. THE LOCATION OF WATER MAINS AND APPURTENANCES FOR THE WATER SERVICE WOULD BE FINALIZED DURING THE DESIGN PHASE.

THE IMPLEMENTATION OF THIS ALTERNATIVE WOULD NECESSITATE ABANDONMENT AND SEALING OF THE INDIVIDUAL RESIDENTIAL WELLS IN ACCORDANCE WITH THE PADER STANDARD SPECIFICATIONS FOR SEALING OF ABANDONED WELLS.

EXTENSION OF THE EXISTING SYSTEM IS A TECHNICALLY FEASIBLE AND IMPLEMENTABLE, HOWEVER, SOME MEMBER OF THE COMMUNITY PREFER TO CONTINUE USING THEIR OWN PRIVATE WELLS CONTAINING THE CARBON FILTER SYSTEMS. THE CAPITAL COST FOR EXPANDING THE WATER COMPANY SYSTEM(S) IS ESTIMATED AT $1,300,000. THE PHYSICAL EXPANSION OF THESE FACILITIES COULD BE IMPLEMENTED IN SIX TO NINE MONTHS INCLUDING DESIGN, APPROVAL, AND CONSTRUCTION OF THE SYSTEM. SIX ADDITIONAL MONTHS ARE NECESSARY FOR ADMINISTRATIVE PURPOSES, SUCH AS SECURING CONTRACTS.

IMPLEMENTATION OF THIS ALTERNATIVE WOULD COMPLETELY ELIMINATE RISK DUE TO EXPOSURE TO CONTAMINATED GROUND WATER OF RESIDENTS USING THE CONTAMINATED GROUNDWATER FOR DRINKING AND CONTACT WATER, IT IS A VIABLE ALTERNATIVE AND REPRESENTS A PERMANENT SOLUTION FOR PROVIDING A DRINKING WATER SOURCE THAT MEETS ALL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH.

ESTIMATED CONSTRUCTION COST: $1,300,000
ESTIMATED ANNUAL O&M: - 0 -
ESTIMATED TIMEFRAME: 1-2 YEARS

PRELIMINARY DETERMINATION OF PREFERRED REMEDIAL ALTERNATIVE

THE PREFERRED ALTERNATIVE IS ALTERNATIVE NUMBER 1. THIS ALTERNATIVE SELECTS CONTINUED USE OF INDIVIDUAL WELL TREATMENT BY GRANULAR ACTIVATED CARBON ADSORPTION AS PER PADER'S CONSENT ORDER. BASED ON NEW INFORMATION OR PUBLIC COMMENTS, EPA, IN CONSULTATION WITH PADER, MAY MODIFY THE PREFERRED ALTERNATIVE OR SELECT ANOTHER RESPONSE ACTION PRESENTED IN THIS PLAN. THE PUBLIC, THEREFORE, IS ENCOURAGED TO REVIEW AND COMMENT ON ALL OF THE ALTERNATIVES IDENTIFIED IN THIS PROPOSED PLAN. THE ADMINISTRATIVE RECORD WOULD BE CONSULTED FOR MORE INFORMATION ON THESE ALTERNATIVES.

THIS ALTERNATIVE PROVIDES COMPLETE PROTECTION, IN THE SHORT-TERM, TO THE GROUNDWATER USERS BY TREATMENT OF THE WATER AT THE INDIVIDUAL WELLS. LONG-TERM EFFECTIVENESS WILL BE OBTAINED BY IMPLEMENTING ADDITIONAL ALTERNATIVES IDENTIFIED IN THE NEXT OPERABLE UNIT WHICH WILL BE AVAILABLE FOR PUBLIC COMMENT ONCE DEVELOPED.

EPA, IN CONSULTATION WITH PADER, HAS MADE A PRELIMINARY DETERMINATION THAT THE PREFERRED ALTERNATIVE PROVIDES THE BEST BALANCE OF TRADE-OFF WITH RESPECT TO THE NINE CRITERIA. IF SELECTED, THE PREFERRED ALTERNATIVE IS ANTICIPATED TO MEET THE FOLLOWING STATUTORY REQUIREMENTS TO:

- PROTECT HUMAN HEALTH AND THE ENVIRONMENT
- ATTAIN ARARS

- BE COST-EFFECTIVE
- UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT (OR RESOURCE RECOVERY) TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

SUMMARIZING THE STATUTORY FINDINGS

IN SUMMARY, AT THIS TIME THE PREFERRED ALTERNATIVE IS BELIEVED TO PROVIDE THE BEST BALANCE OF-TRADE-OFFS AMONG ALTERNATIVES WITH RESPECT TO THE CRITERIA USED TO EVALUATE REMEDIES. BASED ON THE INFORMATION AVAILABLE AT THIS TIME, THEREFORE, EPA AND PADER BELIEVE THE PREFERRED ALTERNATIVE WOULD BE PROTECTIVE, WOULD ATTAIN ARARS, WOULD BE COST-EFFECTIVE, AND WOULD UTILIZE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

NEXT STEPS

FOLLOWING THE CONCLUSION OF THE 30-DAY PUBLIC COMMENT PERIOD ON THIS PROPOSED REMEDY, A RESPONSIVENESS SUMMARY WILL BE PREPARED. THE RESPONSIVENESS SUMMARY SUMMARIZES CITIZEN'S COMMENTS ON THE PROPOSED REMEDY AND PADER AND EPA'S RESPONSES TO THESE COMMENTS. THEREAFTER, PADER AND EPA WILL PREPARE A FORMAL DECISION DOCUMENT THAT SUMMARIZES THE DECISION PROCESS AND THE SELECTED REMEDY. THIS DOCUMENT WILL INCLUDE THE RESPONSIVENESS SUMMARY. COPIES WILL BE MADE AVAILABLE, FOR PUBLIC REVIEW, IN THE INFORMATION REPOSITORY LISTED PREVIOUSLY.

GLOSSARY OF TERMS

ADMINISTRATIVE RECORD (AR) - A LEGAL DOCUMENT THAT CONTAINS INFORMATION ON A SUPERFUND SITE. THE AR SERVES AS THE BASIS FOR THE SELECTION OF A SUPERFUND RESPONSE ACTION, AND THIS RECORD IS AVAILABLE TO THE PUBLIC.

ARARS - APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL, STATE OR OTHER PROMULGATE PUBLIC HEALTH AND ENVIRONMENTAL REQUIREMENT.

CERCLA - COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT ESTABLISHED A TRUST FUND FOR THE PURPOSES OF CLEANUP AT HAZARDOUS WASTE SITES IDENTIFIED ON THE NATIONAL PRIORITY LIST.

FEASIBILITY STUDY (FS) - THE PURPOSE OF THIS STUDY IS TO IDENTIFY AND SCREEN CLEANUP ALTERNATIVES FOR REMEDIAL ACTION, AND TO ANALYZE IN DETAIL THE TECHNOLOGY AND COSTS INVOLVED WITH THE VARIOUS ALTERNATIVES.

NATIONAL CONTINGENCY PLAN (NCP) - CONTAINS THE REGULATIONS THAT GOVERN THE SUPERFUND PROGRAM.

NATIONAL PRIORITIES LIST (NPL) - EPA'S LIST OF THE NATION'S TOP PRIORITY HAZARDOUS WASTE SITES THAT ARE ELIGIBLE TO RECEIVE FEDERAL MONEY FOR RESPONSE UNDER SUPERFUND.

REMEDIAL DESIGN - AN ENGINEERING PHASE THAT FOLLOWS THE RECORD OF DECISION WHEN TECHNICAL DRAWINGS AND SPECIFICATIONS ARE DEVELOPED FOR THE SUBSEQUENT REMEDIAL ACTION AT A SITE ON THE NATIONAL PRIORITIES LIST (NPL).

REMEDIAL INVESTIGATION (RI) - THE PURPOSE OF THIS STUDY IS TO GATHER THE DATA NECESSARY TO DETERMINE THE TYPE AND EXTENT OF CONTAMINATION AT A SUPERFUND SITE.

SUPERFUND - THE COMMON NAME USED FOR THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT, ALSO REFERRED AS THE TRUST FUND. THE SUPERFUND PROGRAM WAS ESTABLISHED TO HELP PAY FOR CLEANUP OF HAZARDOUS WASTE SITES AND TO TAKE LEGAL ACTION TO FORCE THOSE RESPONSIBLE FOR THE SITES TO CLEAN THEM UP.